Scientist as Activist: M. K. Prasad

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M. K. Prasad is a rarity in the community of scientists, someone driven by social concerns and committed to applying his scientific learning to advance the causes he holds dear. His obsession is to empower the common man with the spirit of enquiry, with an urge to question all authority, whether it be of the priests of old tradition who would not allow lower castes to draw water from their wells, or the priests of modernity who preach that we should meekly accept pollution and the despoilment of pristine nature as sacrifices offered up on the altar of progress. He has pushed for these concerns primarily through the medium of the Kerala Sastra Sahitya Parishat, a pioneering popular science movement that has spread to the tiniest backwaters of his native Kerala.

The state of Kerala is a special phenomenon in a country in which only about half the people can read and write. Ernakulam, the coastal district that lies at the heart of the state, is fully literate. M.K. Prasad was born in this district, sixty-seven years ago, on Vypin, an island that stretches across the mouth of Periyar, the mightiest river of the state. At its southern end lies the Kochi harbour. The picturesque island has verdant stretches of mangrove swamps, paddy fields and coconut groves alive with thousands of water birds. But this stretch of the Periyar also constitutes the most industrialised part of Kerala, and so it has turned into one of the most polluted waterways of the state. Soon after MKPs birth came the establishment of a series of chemical industries. The bounty of nature and its despoliation, both of which MKP observed as a child, moulded many of his actions in the years to come.

MKP s social concerns had other significant roots. He is an Ezhava, a community traditionally untouchable to the high castes, a community that was barred entry to education and denied employment in non-manual professions in the traditional society of Kerala. Dr. P Palpu (born 1863), a distinguished leader of this community, was denied admission to Travancore Medical School because of his caste; he went on to obtain modern medical education in Chennai, London and Cambridge. Even so, he was refused employment in the Travancore Health Service because of his low caste and had to migrate to the state of Mysore. He was the prime mover of a memorandum that the Ezhavas submitted to the Maharaja of Travancore in 1896 demanding better educational and employment opportunities. The Durbar responded that this was not acceptable; instead Ezhavas should stick to tapping toddy. Indeed toddy-tapping, along with agriculture, had been the mainstay of the traditional economy of the Ezhavas, occupations that ensured that they were in touch with the living world.

Their constant contact with nature may have ensured that many Ezhavas were highly competent ayurvedic physicians as well. For ayurveda remained an important occupation of many Ezhava families over the centuries. Amongst the best known ayurvedic physicians is Itti Achuthan, an Ezhava who very likely wrote substantial portions of the botanical classic, *Hortus Indicus Malabaricus* (Plants of the Indian Malabar). This enterprise was conceived by Cornellius Van Rheede, an administrator of the Dutch colony at Kochi between 1670-77. Van Rheede collaborated with Itti Achuthan, along with Ranga Bhatt, Vinayak Pandit and Appu Bhatt, who were Saraswat vaidyas; there

were also some European scholars and artists involved. The result was the twelve volume treatise that inspired Carl Linnaeus, the founder of the modern system of biological classification, to devise his own system. An inscription under Linnaeus's portrait in the Royal Swedish Academy of Science says, 'God created life, Linnaeus ordered it.' It is possible that an Ezhava physician catalysed this modern ordering of the living world.

Notably enough, Ezhava vaidyas such as Itti Achuthan knew Sanskrit, and through that language, ayurvedic texts. This is quite unusual, for over much of India Sanskrit learning and mastery over classical texts of ayurveda was traditionally denied to non-Brahminical castes, just as Dr. Palpu was denied admission to Travancore Medical School in 1878. This unusual heritage of Kerala may date from its Buddhist past when learning very likely had a much broader social base.

With its tremendous wealth of plants, Kerala has an old, well entrenched ayurvedic tradition. A major figure in this tradition is Vagbhata, dated between the sixth to ninth centuries. A Buddhist himself, Vagbhata was apparently forced to leave his native Sind at a time when Buddhism was on retreat. He then migrated to Kerala where he must have found a congenial atmosphere in a land rich in plants and in traditions of herbal medicine. His composition, *Ashtangahrdayam,* is the last of the ayurvedic classics. It distilled the wisdom of Charaka and Sushruta and added to it the uses of many plants of Kerala, since the earlier works focused on those of the Himalaya. Vagbhata probably had disciples from many communities, including the Ezhava, and his works form the foundation of the socially broad-based ayurvedic tradition of Kerala.

Much has been written of the history of modern education in Kerala, the role in it of the famous proclamation in 1817 of the Travancore Maharani, pleading for universal education, and the role of the Christian Missionary Schools. As Dr. Palpus history shows, the Travancore royalty did not do all that much to promote education amongst the lower castes. What has not been discussed much is the role of Ezhava ayurvedic physicians. It is without doubt a significant factor. Through this tradition of ayurveda, a community treated as untouchables could transform themselves into people pursuing a rejected learned profession, and knowledgeable in Sanskrit, the traditional medium of all Indian learning.

In such a family of Ezhava ayurvedic physicians was born Narayanaguru (1856-1928), spiritual leader and great social reformer. Unlike other Ezhavas who confined their Sanskrit reading to ayurvedic works, Narayanaguru studied religious texts as well; indeed he even composed religious tracts in Sanskrit such as *Advaita Deepika.* He rejected the divisions of caste and religion and preached of one humanity under one God. He established temples open to all castes, and to such temples were attached schools that brought together children of all communities.

Narayanaguru's influence was critical in breaking down caste barriers in the traditional society of Kerala. His associates included Dr. Palpu, and Ayyappan, a powerful writer and orator. Ayyappan was born in 1889 on Vypin Island, close to MKPs ancestral home. He launched a movement for universal brotherhood that he popularised through a magazine named *Sahodaran* (Sahodara, i.e. brother, born of the same belly); eventually he became well-known as 'Sahodaran Ayyappan'. Sahodaran Ayyappan was greatly influenced by the October 1917 Russian revolution. It was his writings that first exposed EMS Namboodripad to Marxist philosophy. He lectured and wrote extensively,

and part of his campaign was *mishrabhojana*, eating communally, regardless of caste. The first of these *mishrabbojanas* was held on 17 May 1917, not far from MKPs ancestral house. MKP s father joined the event and as a consequence his family was ex-communicated. After this, MKP's uncle, Krishna Seeri, who was a respected Ezhava ayurvedist, found that people from all communities continued to consult him—but standing *outside* his fence his family remained ostracised. However the excommunication was short-lived, thanks to a strong expression of support for *mishrabhojanas*, and a strongly-worded rejection of caste by the powerful Narayanaguru.

The egalitarian, rational philosophy advocated by Sahodaran Ayyappan was thus an important element in the atmosphere MKP was brought up in. So was the tradition of ayurveda, of which his uncle, Krishna Seeri, was a reputed practitioner. Krishna Seeri had studied Sanskrit and ayurveda as traditional in his community; he was not exposed to formal education as introduced by the British. But MKP studied in the Rama Varuna Union High School that was established jointly by the local Christian and Hindu community leaders. The energetic head master of this school, K.C. Abraham, who was to serve later as Governor of Gujarat, was MKPs guru, shaping his career. His family expected MKP to follow in his uncle's footsteps and study ayurveda after finishing school. But K.C. Abraham urged him to join Maharaja's College in nearby Kochi. Fascinated by the rich plant life around him through his childhood, and skilled at drawing and painting, MKP chose botany. Rounding up his undergraduate education with an M.Sc. from Birla College, Pilani, MKP joined the Kerala State Educational Service in 1955.

Science-writing in Malayalam began in earnest around this time. The first of these efforts, in 1960, was a publication modelled after Penguin Science News. These attempts led to the establishment of Kerala Sastra Sahitya Parishat in 1962. Initially the KSSP focused on publishing scientific magazines—*Sastragati* for adults, *Sastrakeralam* for high school students, and *Eureka* for Upper Primary students. MKP was attracted to these publications, and joined the KSSP when it decided to broaden its membership from a couple of hundred science writers to others interested in applying a scientific approach to problems of society. His first responsibility on joining the KSSP in 1967 was to build up an Ernakulam district unit. Teaching botany at his alma mater Maharaja's College, MKP became a prolific writer for these journals, and set himself to address newer challenges for the movement.

One such challenge was that of industrial pollution. The estuaries of the Periyar near Kochi were in a very bad shape, with much consequent suffering for the local people, but in the 1960s nobody thought this was an issue. After all, India was still enamoured of the philosophy of development, and of the imperatives of industrialising as rapidly as possible. MKP did not agree. He became one of the earliest proponents of the need to pursue development, but without destruction. As early as 1971 he, along with a few other scientists like S.Z. Qasim and U. K. Gopalan, organised through KSSP a seminar on the pollution problems of Ernakulam district. KSSP thus turned from a movement that merely gave lay people scientific information to one that raised issues of social relevance, and applied science to their elucidation. It was a movement from theory to application. As this transformation took place in the mid-1960s, KSSP's membership grew tenfold from the initial few hundreds to three or four thousand.

The KSSP seminar on pollution actually preceded the Stockholm meeting on human environment in 1972. The Stockholm meeting heralded the worldwide awakening of environmental consciousness, which was reflected in India as well. In 1973, Project Tiger was launched by the Government of India on one hand, and on the other, the Chipko movement by the peasants of Garhwal began. The KSSP filled a special niche in this awakening; it pioneered careful, broad-based analyses of the issues on behalf of the public. This is of great significance, for in India, as the world over, much environmental destruction is a fall-out of powerful interests attempting to escape having to pay the environmental costs of their actions, instead passing these on to the people at large. This was the case, for instance, with a rayon factory which wished not to bear the costs of treating effluents, but forced the people to pay by their loss of access to the formerly clean waters of the Chaliar River. Governments tend to back these vested interests and therefore impede rather than promote public appreciation of contentious issues by hiding all pertinent information behind the veil of official secrets acts.

The KSSP brought in independent experts to look at issues such as Chaliar pollution, publishing in 1979, an independent study of the 'Dying River'. The spirit of such enquiries was captured by the slogan adopted by KSSP in 1974, 'Science for Social Revolution'. But the most celebrated of such KSSP studies was that relating to the Silent Valley hydroelectric project. This project was to submerge one of the biologically richest tracts of the Western Ghats, notable for the many plant and animal species restricted to it. After a field visit to the valley, MKP was fascinated by its living wealth, and in 1977 wrote an article in *Sastragathi*, pleading that it be spared submersion. Initially KSSP members were not convinced; for after all they were greatly concerned with the need to generate power and with that, employment in the state. But MKP persisted, emphasising the need to take a broader view of the problem. He joined hands with physicist, engineer, agricultural scientist, and economist colleagues for a social, technical and economic assessment of the project. This classic study brought to light the fact that Kerala could make available much more energy at a lower cost by investing in energy conservation than by constructing a hydel power plant.

The analysis convinced the KSSP membership of the merit of conserving Silent Valley. The next task was that of educating the people, and the KSSP launched a vigorous campaign using tools such as street plays that were performed by troupes traversing the length and breadth of the state. In the process began the KSSP Environment and Health Brigade which spearheaded the spread of environmental awareness in the state, and later in other parts of the Western Ghats as well. What quite naturally followed these attempts to involve the people was to organise them to document the environmental resources of their own localities. In 1990 the programme of Panchayat Level Resource Mapping began, during which scientists of the Centre for Earth Science Studies and State Land Use Board in Thiruvananthapuram worked with locals to document their land, water, agricultural, forest and other resources. One of the notable successes of these programmes was in Kalliassery Panchayat in Kannur district, where the exercise revealed an old water drainage channel that had become dysfunctional. Kalliassery used to suffer serious flood problems, including occasional loss of human lives, and people realised that repairing the old drainage channel might be the answer. They resolved to contribute their labour, and collaborating with official machinery, finally solved the problem. Such experiences in the highly literate milieu of Kerala have

contributed to the devolution of power to local institutions. The KSSP has itself played an important role in the spread of literacy, as the major non-governmental organisation driving the Literacy Mission from 1986 to 1990. MKP was also actively engaged in the drive that led to his native district of Ernakulam being declared the first totally literate district of India on 4 February 1990.

All these developments have culminated in Kerala leading the country in actually passing on the responsibility of the planning and utilisation of about a third of its development funds to the panchayat level. The Kerala State Planning Board, to which MKP is a consultant, has vigorously pushed for more local power. Of course it is not enough for people to have funds at the disposal of the panchayat; they must learn to manage these funds effectively and use them productively. This calls for putting the requisite scientific and technical expertise at their service, and MKP has actively participated in creating cadres of experts to help people in every district. The exercise also calls for tapping people's knowledge of their local environmental resources, as with the drainage system of Kalliassery, and the instrument for this is the regular Panchayat Development Report that is prepared with the involvement of local people. These are remarkable documents: for the first time the detailed, localised understanding that is essential to fine tuning development programmes to focal environmental contexts is being captured in a systematic fashion.

MKP is playing a central role in this process. A special set of documents have been prepared in Ernakulam district. Called People's Biodiversity Registers, these records in depth local living resources and their utilisation. The eighty-six Registers that span all of Ernakulam district are a unique set of documents. For instance, they name the local cultivars of paddy still being grown in each of the panchayats. Such a documentation is the beginning of the registration of farmers' varieties that would be essential to organising the benefit-sharing arrangements visualised under the Convention on Biological Diversity. No such arrangements were in place when Pattambi, a paddy variety from the Palghat district of Kerala, contributed a gene that gave paddy crops resistance to an insect pest, brown leaf hopper, that was wiping out high-yielding varieties of paddy in Southeast Asia in the 1 970's. Now that the provisions exist we need documentation such as in Ernakulam's Registers as well as serious investigations by plant geneticists to characterise farmers' varieties.

Peoples Biodiversity Registers also include documentation of other living resources such as medicinal plants and their uses. The state of Kerala leads the world in justly sharing the benefits of commercialising the traditional knowledge of medicinal herbs. The Tropical Botanical Garden and Research Institute received ten lakhs of rupees from the Coimbatore Aryavaidya Pharmacy for providing them the know-how for the production of Jeevani, a tonic made from the Arogyapaccha (*Trichopus Zeyianicus)* plant. It gave half the money to the Kani tribals, the originators of the manufacturing process. This significant initiative is possible to replicate on a larger scale only with the help of systematic documentation such as these Registers provide.

I began by suggesting that the many progressive features of Kerala society may have their roots in the rich medicinal tradition of this state, a tradition that ensured the Ezhavas remained in constant touch with the world of nature. Nurtured in this tradition, MKP has played a significant role in empowering the people of the state in assuming an active role

in caring for nature. There is of course a long way to go, but there can be no doubt at all that it is only with the genuine commitment and involvement of local people that we stand a chance of conserving and putting to good use our magnificent natural heritage.